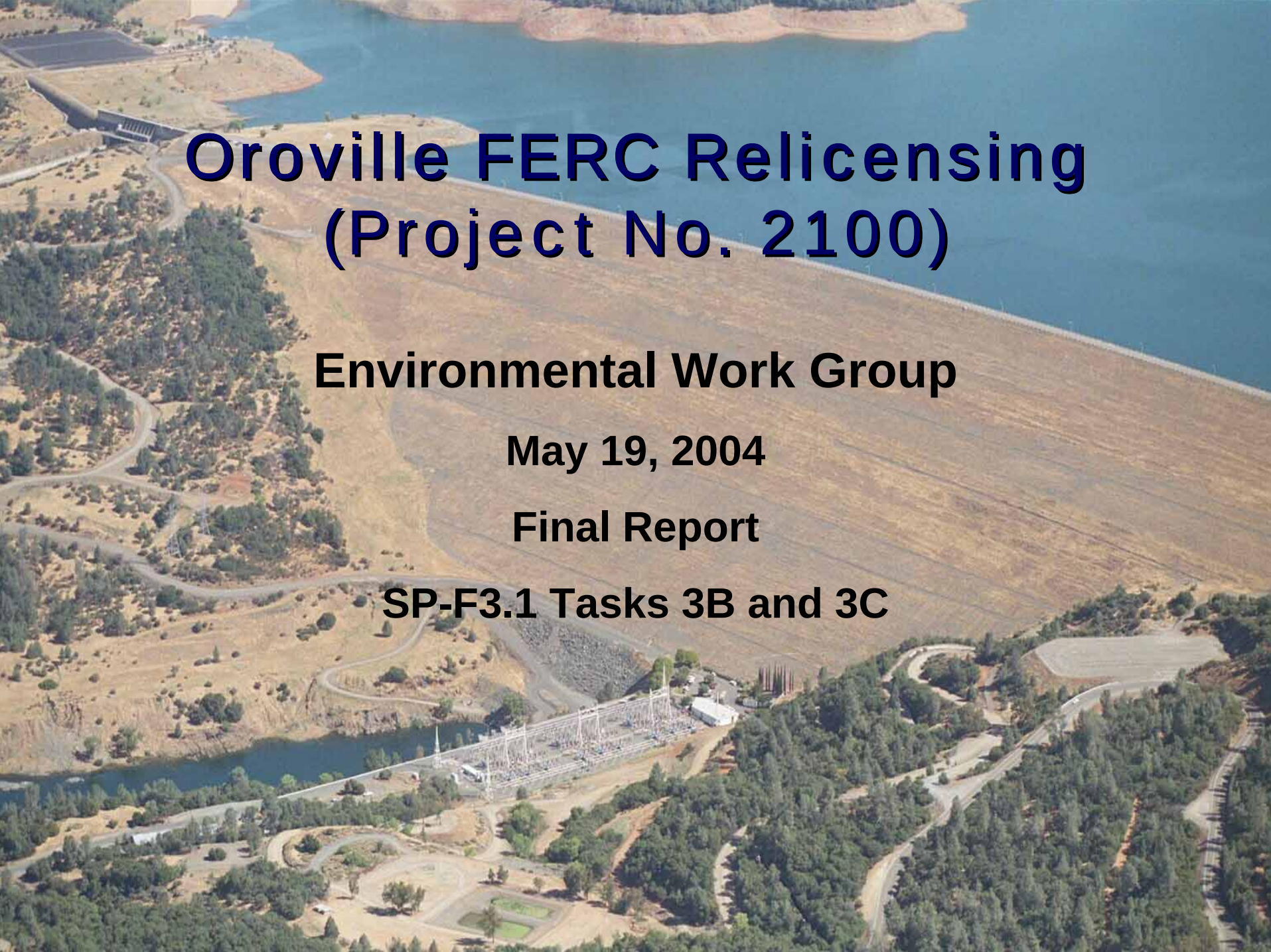


Oroville FERC Relicensing (Project No. 2100)

Environmental Work Group

May 19, 2004

Final Report

SP-F3.1 Tasks 3B and 3C

Project Operations Influencing Fish Habitat and Water Quality in the Thermalito Diversion Pool and Thermalito Forebay

SP-F3.1 Tasks 3B and 3C

Study Objectives

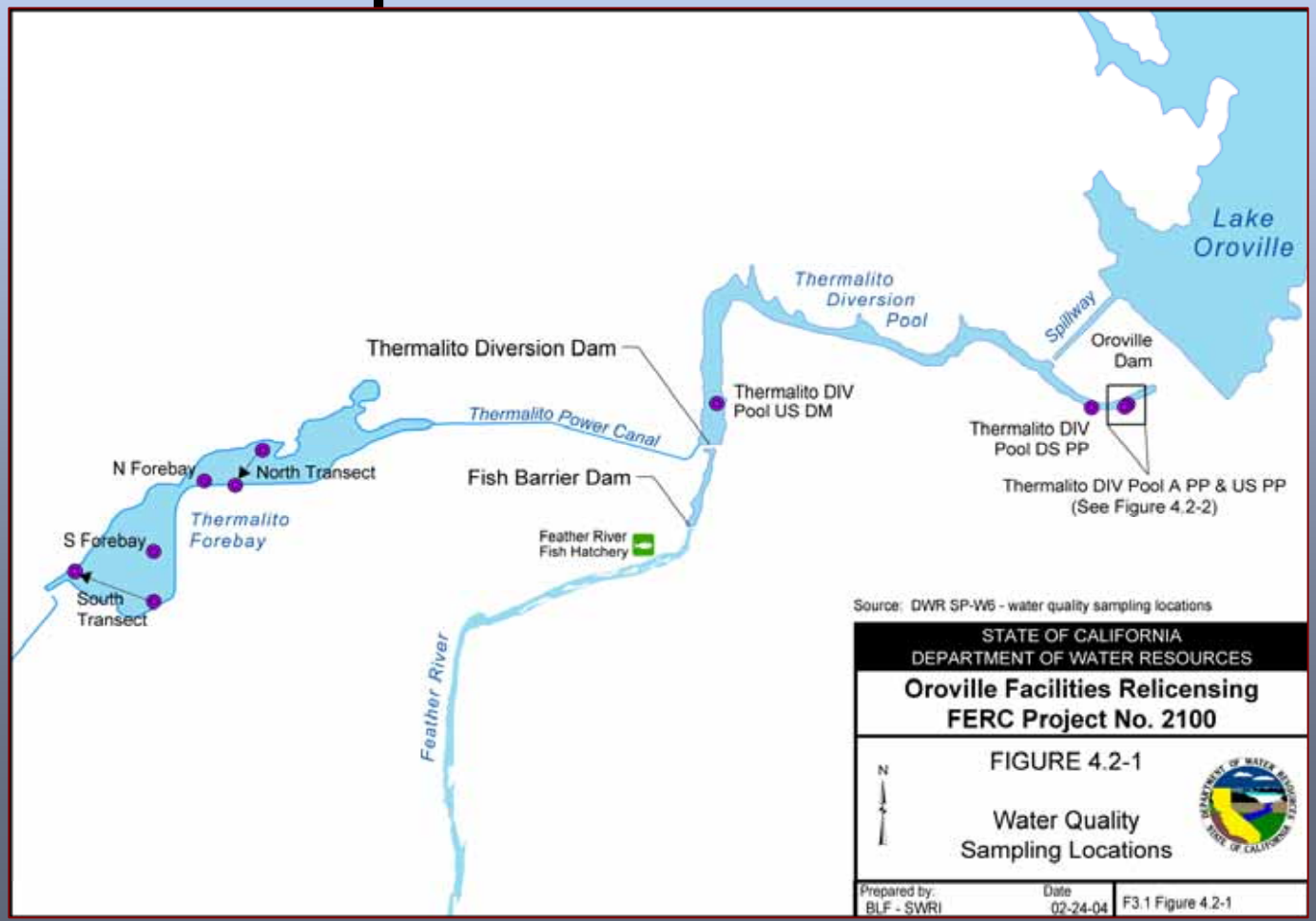
- **Describe fish habitat in the Thermalito Diversion Pool and Thermalito Forebay**
- **Describe project operations affecting water quality in the Thermalito Diversion Pool and Thermalito Forebay**

Report Overview

- **Described habitat availability and suitability for coldwater species within the Thermalito Diversion Pool and Forebay.**
- **Provided a qualitative, conceptual, descriptive narrative characterizing operations influencing these reservoirs.**
- **Combined reports based on similarities in data analyses.**
- **Generally habitat exists for coldwater species and project operations do not generally affect habitat availability.**

Methodology
Data Collection

- **Water Temperature and DO Collection**



Results
Literature Review

- **Determine Thermal Tolerance Ranges**
  - **Suitable for growth – 19°C (66.2°F) or less**
  - **Unsuitable for growth but sub-lethal – 19°C (66.2°F) to 24°C (75.2°F)**
  - **Unsuitable for a put-and-take fishery – greater than 24.1°C (75.2°F)**
- **Determine DO Tolerance Range**
  - **30-day minimum – 6.5 mg/L**

Results
Data Collection

- **Thermalito Forebay**
  - **Extreme values for water temperature and dissolved oxygen**

Station Location	Extreme	Water Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
North Transect	High	15.2	10.4
North Transect	Low	8.6	8.0
South Transect	High	18.1	10.5
South Transect	Low	8.9	8.0
N Forebay	High	15	11.6
N Forebay	Low	8.8	8.4
S Forebay	High	16.3	8.5
S Forebay	Low	9.1	11.4

Results
Data Collection Cont.

- **Thermalito Diversion Pool**
  - **Extreme values for water temperature and dissolved oxygen**

Station Location	Station Type	Extreme	Water Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
Thermalito DIV Pool US PP	Profile	High	19.1	10.8
Thermalito DIV Pool US PP	Profile	Low	8.2	8.0
Thermalito DIV Pool DS PP	Profile	High	8.4	11.0
Thermalito DIV Pool DS PP	Profile	Low	13.7	8.7
Thermalito DIV Pool US DM	Profile	High	16.2	11.3
Thermalito DIV Pool US DM	Profile	Low	8.2	6.9

Results
Data Collection Cont.

- **Thermalito Diversion Pool Cont.**
  - **Extreme values for water temperature and dissolved oxygen**

Station Location	Station Type	Extreme	Water Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
Thermalito DIV Pool US PP	Thermograph	High	17.1	N/A
Thermalito DIV Pool US PP	Thermograph	Low	7.0	N/A
Thermalito DIV Pool A PP	Thermograph	High	**37.6**	N/A
Thermalito DIV Pool A PP	Thermograph	Low	6.2	N/A
Thermalito DIV Pool DS PP	Thermograph	High	17.1	N/A
Thermalito DIV Pool DS PP	Thermograph	Low	7.0	N/A

Conclusions

- **Suitable water temperatures exist for salmonid growth almost in almost all of the data observed for both the Thermalito Diversion Pool and Thermalito Forebay.**
- **There were no observed incidences of DO's below tolerances**
- **Although project operations do effect water temperatures, they have a small overall effect on water temperature suitability for a coldwater put-and-take fishery.**